

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002827**Date Inspected:** 05-Jun-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Hu Wei Qing and Shazhi**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG and SAS Tower Fabrication**Summary of Items Observed:**

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on these Bays mentioned below;

Bay 4: OBG side/bottom/edge panel:

This QA Inspector randomly observed ZPMC NDT Botin Yui perform 10% Magnetic Particle Testing on fillet welds of 2-open rib side panels SP083-001-029~032, SP088-001-017~020, SP083-001-017~020, SP088-001-005~008, SP088-001-029~032 and SP083-001-005~008. It was noted that rust and scale have been removed by ZPMC workers on both sides of weld areas prior MT testing. Electromagnetic Yoke was used with alternating current (AC) as power source. The detection media used was dry red ferromagnetic particles and applied with powder blower while the magnetizing force is on. While the ZPMC NDT Botin was MT testing the welds, this QA randomly perform VT on fillet welds of side panels mentioned and appears conforming to the project requirements. This QA also observed ZPMC's conduct of MT on these welds deemed acceptable.

Bay 7: OBG - Floor Beam Sub Assembly:

The QA Inspector randomly observed ZPMC welder Huang Xin Lan ID Number 044780, utilizing the Submerged Arc Welding (SAW) Process in the 1G Position (Flat Groove) with ZPMC WPS WPS-B-T-2221-B-L2c-S-1, to weld the cover pass in plate splice butt joint FB040-001-077 floor beam. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing monitoring weld parameters. The QA Inspector also randomly monitored weld

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parameters and recorded them as follows: 513 amps, 30.8 volts with a travel speed of 441 mm per minute. The weld parameters appeared to comply with contract requirements.

QA Inspector J. Lizardo randomly observed ZPMC qualified welder Zhang Qingquan ID #044774 groove welding fill pass on (flange to web plate) tee joint. Mr. Zhang was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB011-004-043. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS).

FCAW fillet welding (2F) was also observed on flange to web plate of beam sub-assembly FB016-014-030 and FB012-011-010. ZPMC welder working on these was identified as Hong Shin Liu ID# 044815. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. Tack welding/fit-up was continuing on stiffener to web plate of floor beam FB012-011-013/014 and FB012-011-010 using electrode TL-508. During tack welding/fit-up of these sub-assemblies, paint coating was removed, close and tight gap noted and preheating was used. Carbon arcing/back gouging of plate splice butt joint after welding one side on floor beam FB039-001, and grinding after back gouging on FB028-001 was also observed.

FCAW fillet welding (2F) was also observed on welded spacer beam W5.5 X 25.5 inches long for various floor beams FB006-023-018, FB006-023-003, FB006-023-009 by two ZPMC welder Chen Chun Zong ID# 044824 and Zhang Liang ID# 067036 using WPS-B-T-2132-3. The QA Inspector randomly observed ZPMC QC monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 278amps, 30.8 volts with a travel speed of 414 mm per minute and 298Amps, 30.6Volts with travel speed of 421mm/min. respectively on these two welders. The weld parameters appeared to comply with contract requirements.

This QA observed tack welding utilizing FCAW 3G position on two CJP skewed connector plate to floor beam bottom flange of SSD17-PP027-005 and 006. ZPMC qualified welder Liu Long Xian ID #044786 was using WPS-B-T-2233-Tc-U4b-F to carry out this task. In this observation, the gap was usual and paint coating on weld surfaces removed. See photo below.

### Bay 8: Tower Diaphragms

The QA Inspector randomly observed ZPMC welder Xu Pei Pei ID Number 050323, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-3221-B-U3c-S-1, to weld the fill pass on plate butt splices of Tower Diaphragm WSD1-SA309-11A/12A. The QA Inspector randomly observed ZPMC CWI Lvliqing, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 612 amps, 31.1 volts with a travel speed of 462 mm per minute. Weld parameters appeared to comply with contract requirements.

QA Inspector randomly observed ZPMC qualified welder ID #045148 welding repair on two diaphragm plates splice butt joint WSD1-SA290-11B/12B and NSD1-SA169A/B-1A/1B due to UT reject and was using Welding Repair Report T-WR048 AND T-WR053 respectively. This welder was observed welding in the 1G (flat) position utilizing a Shielded Metal Arc Welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand Excalibur 9018M H4R. This QA observed the ZPMC QC CWI Inspector Lvliqing verifying that the welding

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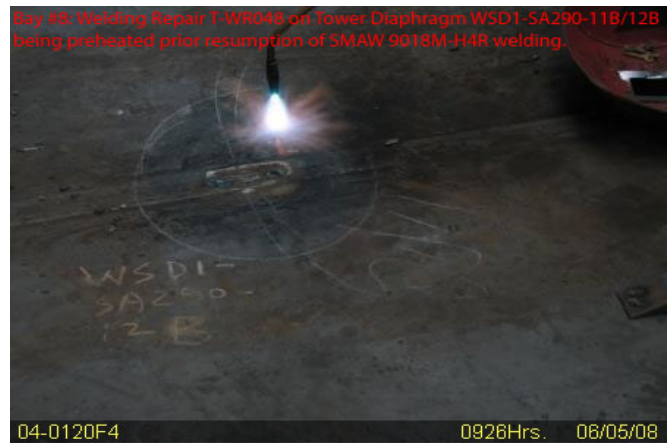
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parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Lvliqing to be: preheat temperature of >180°C but <230°C and welding parameters amps of 194, volts of 24.6. Welding parameters observed by QA Inspector J.Lizardo appear to be in general compliance with the approved WPS-485-SMAW 1G(1F) Repair-1. See photo below.

This QA Inspector randomly observed ZPMC welder Liu Long Xian ID Number 044786 utilizing the FCAW Process in the 3G (Vertical uphill) Position with ZPMC WPS WPS-B-T-2233-Tc-U4b-F, to weld skewed connector plate to floor beam bottom flange SSD17A-PP027-131. The QA Inspector randomly observed ZPMC QC Xia Yong Theng monitoring weld parameters. The weld parameters appeared to comply with contract requirements.



### Summary of Conversations:

No significant conversation occurred today.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

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**Reviewed By:** Cochran, Jim

QA Reviewer

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